SNS COLLEGE OF ALLIED HEALTH SCIENCES

SNS Kalvi Nagar, Coimbatore - 35

Affiliated to Dr MGR Medical University, Chennai

DEPARTMENT : PHYSICIAN ASSISTANT

COURSE NAME : PHARMACOLOGY

UNIT : DRUGS ACTING ON HEART

TOPICS : ANTI-ANGINAL DRUGS

ANTI - ANGINAL DRUGS

- Anti-anginal drugs are a class of medications used to treat angina pectoris, a condition characterized by chest pain or discomfort due to reduced blood flow to the heart muscle.

Nitroglycerin (Organic Nitrate)

Mechanism of Action:

- Converts to nitric oxide (NO) in the body.
- NO activates guanylate cyclase, leading to increased cyclic guanosine monophosphate (cGMP).
- cGMP causes vasodilation of coronary arteries and veins, reducing myocardial oxygen demand.

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Pharmacodynamics:

- Vasodilation of coronary arteries and veins.
- Decreased preload and afterload.

Pharmacokinetics:

- Rapid absorption through oral, sublingual, or transdermal routes.
- Short half-life necessitates frequent dosing.

Side Effects:

- Headache (common).
- Hypotension.
- Reflex tachycardia.
- Tolerance with prolonged use.

Indications:

- Acute angina attacks.
- Prophylaxis of angina.

Contraindications:

- Severe anemia.
- Closed-angle glaucoma.
- Hypotension.

Beta-Blockers (e.g., Metoprolol, Atenolol)

Mechanism of Action:

- Blocks beta-adrenergic receptors, reducing heart rate and contractility.
- Decreases myocardial oxygen demand.

Pharmacodynamics:

- Negative chronotropic and inotropic effects.
- Reduced myocardial oxygen consumption.

Pharmacokinetics:

- Variable half-lives depending on specific drug.

Side Effects:

- Bradycardia.
- Fatigue.
- Bronchospasm (in asthmatic patients).

Indications:

- Stable angina.
- Post-myocardial infarction.

Contraindications:

- Severe bradycardia.
- Heart block.
- Asthma (non-selective beta-blockers).

Calcium Channel Blockers (e.g., Amlodipine, Diltiazem, Verapamil)

Mechanism of Action:

- Inhibit calcium influx into vascular smooth muscle and myocardial cells.
- Vasodilation and reduced myocardial contractility.

Pharmacodynamics:

- Coronary and peripheral vasodilation.
- Reduced afterload.

Pharmacokinetics:

- Variable depending on the specific drug.

Side Effects:

- Constipation (verapamil).
- Edema (amlodipine).
- Bradycardia (verapamil).

Indications:

- Variant angina.
- Exertional angina.

Contraindications:

- Heart failure (especially verapamil and diltiazem).
- Severe hypotension.

Ranolazine

Mechanism of Action:

- Inhibits late sodium influx during myocardial action potential.
- Reduces intracellular calcium and myocardial oxygen demand.

Pharmacodynamics:

- Improved coronary blood flow.
- Prolongs exercise duration.

Pharmacokinetics:

- Extensive hepatic metabolism.

Side Effects:

- QT interval prolongation.
- Dizziness.
- Constipation.

Indications:

- Chronic angina.

Contraindications:

- Liver impairment.
- Concurrent use with strong CYP3A inhibitors.

Physician Assistant Role

- Regular assessment of angina symptoms.
- Electrocardiogram (ECG) monitoring for rhythm abnormalities.
- Blood pressure and heart rate monitoring.
- Side effect assessment and patient education.

ASSESSMENT

- What all are the Anti-anginal drugs ?
- What is the Pharmacodynamics of Ranolazine ?